REMARKS

Claims 26-33, 35, 37, 38 and 41-43 were pending in the application. In the Office Action mailed June 24, 2009, claims 26-33, 35, 37, 38 and 41-43 are rejected. In the instant Amendment, claims 26, 27, 37 and 38 have been amended, and new claim 44 has been added. Upon entry of the instant Amendment, claims 26-33, 35, 37, 38 and 41-44 will be pending in the application.

Claims 26 and 27 have been amended to recite that the pH of the slurry is adjusted to within the range from 7 to 11.5 to reduce dissolution of zinc and/or lead compounds. Support for this amendment is found in the specification, at page 22, line 35 through page 23, line 3 and at page 23, lines 9-11. Claims 37 and 38 have been amended similarly.

Support for claim 44 is found in the specification at page 22, line 35 through page 23, line 3.

No new matter has been added by these amendments. Entry of the foregoing amendment to the claims and consideration of the following remarks are respectfully requested.

Rejection under 35 U.S.C. § 112

Claims 26-33, 35, 37, 38 and 41-43 are rejected under 35 U.S.C. §112 as failing to comply with the written description requirement. The claims allegedly contain subject matter which is not described in the specification in such a way as to reasonable convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, has possession of the claimed invention. The Examiner contends that applicant does not provide support for minimizing leaching of Zn or Pb. While not acquiescing to the correctness of the Examiner's contention, Applicants have amended the claims to recite that in the claimed method, the pH of the slurry is adjusted to within the range from 7 to 11.5 to reduce dissolution of zinc and/or lead compounds. The specification discloses that:

> [o]n the other hand, when the feed material powder contains relatively large amounts of zinc and lead, it is necessary to adjust the pH of the water of the slurry. Zinc and lead are amphoteric metals and dissolve in acidic solutions or high pH strongly alkali solutions.
>
> As a result, they become causes of contamination of water. Further, there is resulting loss of the useful metals of zinc and lead. Therefore,

> the pH is adjusted so that the zinc and lead will not dissolute in the water.

Specification, page 22 lines 8-16. The specification then discloses that

> [w]hen the pH of the water becomes 7 or more, the zinc and lead will no longer dissolve much at all. On the other hand, the zinc and lead will start to dissolve from the point where the pH exceeds 11. ...
>
> ...
>
> Therefore, in the case of a feed material powder containing a certain extent or more of, in general 0.3 mass % or more of, zinc and lead, the pM of the water forming the slurry is preferably in the range of 7 to 11.5.

Specification, page 22, lines 29-32; and page 23, lines 7-11. Thus, the application as filed clearly discloses that the method of the invention involves adjusting the pH of water forming the slurry to reduce dissolution of zinc and lead. Applicants respectfully request withdrawal of the rejection to claims 26-33, 35, 37, 38 and 41-43 under 35 USC § 112 for lack of written description.

Rejection under 35 U.S.C. § 103

Claims 26-33 and 35 are rejected under 35 U.S.C. § 103(a) as being unpatentable by USPN 6,755,888 to Ibaraki et al ("US'888") in view of USPN 5,851,490 to Myerson et al ("US'490"), USPN 6,500,229 to Roux et al ("US'229"), and USPN 6,648,942 to Hoffman et al (US'942).

The pending independent claims 26 and 27, from which claims 28 to 33, and 35 depend, are directed to a method of preventing inorganic zinc, lead, or alkali metal compounds of oxygen or halogens, or mixtures thereof, from depositing inside the exhaust gas treatment system of a rotary hearth type reduction furnace. See, specification as filed, e.g., page 29, line 35 through page 30, line 2. As amended, claims 26 and 27 require a step of mixing said feed material with water sufficient to solublize alkali salts thereby providing a slurry, wherein the pH of said slurry is adjusted to within the range of 7 to 11.5 to reduce dissolution of zinc and/or lead compounds (see, the specification, at page 22, line 35 through page 23, line 3 and at page 23, lines 9-11). In particular, the present specification discloses that since zinc and lead are amphoteric metals and dissolve in acidic solutions or high pH strongly alkali solutions, it is necessary to adjust the pH of the water of the slurry in order to

avoid the loss of the useful metals zinc and lead and to prevent the contamination of the treatment water (see, specification as filed, at p. 22, ll. 8, 16).

In contrast, US'888 relates to a facility for reducing metal oxides, a rotary hearth reducing furnace, a method for reducing a metal oxide using the same, and to a method for reducing metal oxide-containing dusts and sludge generated by the metal refining or processing industry (see, US'888, Abstract). The Examiner has acknowledged that US'888 does not teach alkali and halogen contents, solubilizing alkali salts, producing a slurry with a pH of 7-11.5, providing a dehydrated material enriched in zinc and/or lead or a waste heat boiler and an air preheater (see, Office Action at page 5).

US'490 teaches a pyrometallurgical process and condensation of metal vapors by extraction into an ammonium chloride solution which is kept at a pH of less than 6.3 (US'490, Abstract; and col. 3, ll. 7-20). The pH of the solution is carefully controlled to be less than about 6.3 to *keep zinc in solution* until zinc is recovered by recrystallization (see, US'490, col. 3, ll. 24-26). US'490 further teaches using a 18-23% ammonium chloride solution at a temperature of at least 90 °C for best solubility of zinc (see, US'490, col. 5, ll. 50-53). Thus, US'490 not only does not teach or suggest reducing the dissolution of zinc and/or lead, but, to the opposite, teaches obtaining the best solubility of zinc.

US'229 provides a method for treating steel works dust that includes a washing step to separate the water soluble saline fractions and *insoluble* oxides (see, US'229, Abstract). US'229 discloses that zinc is present in two forms, zinc oxide, ZnO, and zinc ferrite, $ZnFe_2O_4$. The extraction of zinc and lead oxides occurs along with the water soluble saline fractions is further evidenced by the recovery of zinc from the "solution obtained by filtration [which] contains ... around 18 g/l of zinc" which is isolated as solid zinc via electrolysis (see, e.g., US'229, col. 7, l. 66 – col. 8, l. 2). US'229 also teaches dissolving lead in the case of dust containing lead (see, US'229 col. 8, ll. 48-52). Thus, US'229 also does not teach or suggest mixing a feedstock with water sufficient to solublize alkali salts while adjusting the pH to reduce dissolution of zinc and/or lead.

US'942 is cited by the Examiner as teaching a method and apparatus of iron-making/steel-making using a modified rotary hearth furnace (abstract). US'942 is not concerned with water processing of metal waste and does not remedy the deficiencies of US'888, US'490, or US'229.

Therefore, both US'490 and US'229 teach hydrodynamic methods of treating zinc and/or lead containing metal waste in which zinc and/or lead is isolated by aqueous dissolution, followed by isolation of zinc and/or lead by crystallization or electrolysis. US'888 and US'942 are not concerned with hydrodynamic processing of metal wastes/feedstock, much less adjusting the pH to 7-11.5 for reducing the dissolution of zinc and/or lead. Thus, none of US'490, US'229, and US'942 teaches or suggests a step of mixing a metal waste feed material with water sufficient to solublize alkali salts wherein the pH is maintained in the range of 7.5 to 11 in order to reduce the rate of dissolution of zinc oxide and lead oxide to 5% or less thereby providing a dehydrated material enriched in zinc and/or lead. Therefore, neither of these references supplies the elements that are missing in US'888.

Therefore, for at least the reasons discussed above, claims 26-33 and 35 are not obvious under 35 U.S.C. § 103(a) over US'888, US'490, US'229, and US'942, either alone or in combination.

It is submitted that in view of the present amendment and foregoing remarks, the application is now in condition for allowance. It is therefore respectfully requested that the application, as amended, be allowed and passed for issue.

Respectfully submitted,

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